A New Species of *Dakinomyia* from Queensland (Diptera: Asilidae)

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DANIELS, G. A new species of *Dakinomyia* from Queensland, (Diptera: Asilidae). *Proc. Linn. Soc. N.S.W.* 103 (4), (1978) 1979: 275-281.

Dakinomyia secuta sp. nov. is described from central Queensland, the genus previously having been recorded only from Western Australia. Prey is recorded for the new species and additional distribution records of *D. froggattii* (Dakin and Fordham) are noted.

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INTRODUCTION

Hull (1962) records three Australian asilid genera, *Opseostlengis* White, *Questopogon* Dakin and Fordham and *Dakinomyia* Hardy, as being confined to the higher rainfall area of south-west Western Australia, each genus being considered as monotypic.

Daniels (1976) recorded four species of *Questopogon* from all states except Tasmania and the Northern Territory. The known distribution of *Dakinomyia* is extended to Queensland where it is represented by *D. secuta*. Presumably collecting in inland Queensland, South Australia and Northern Territory will confirm the presence of the genus in intermediate localities.

Material was examined and is housed in the following collections, abbreviated as:

AM	Australian Museum, Sydney
ANIC	Australian National Insect Collection, Canberra
BM	British Museum (Natural History), London
GD	Author's collection, Sydney
MM	Macleay Museum, Sydney
WAD	Western Australian Department of Agriculture, Perth.

DAKINOMYIA Hardy

Dakinomyia Hardy, 1934: 25. Type-species by original designation: *Neosaropogon froggattii* Dakin and Fordham, 1922.

Flies of this genus are readily distinguished from all other Australian asilids by the distinct wing venation, the long, distal extension of the second, third and fourth posterior cells being very characteristic. They are large flies of bare aspect with a long subcylindrical and tapered abdomen. The male terminalia are rotated 90°. The facial bristles are restricted to the dorsal epistomal margin.

Hardy (1934: 25) recorded *Dakinomyia secuta* sp. n. from Eidsvold, Queensland under the incorrect name *Neosaropogon claripennis* Ricardo. An examination by Mr R. Leeke of the 'type' of *N. claripennis* at the British Museum shows that *N. claripennis* is not congeneric. At present *N. claripennis* is retained in *Neosaropogon*.

Dakinomyia secuta sp. n.

Figs 1-7

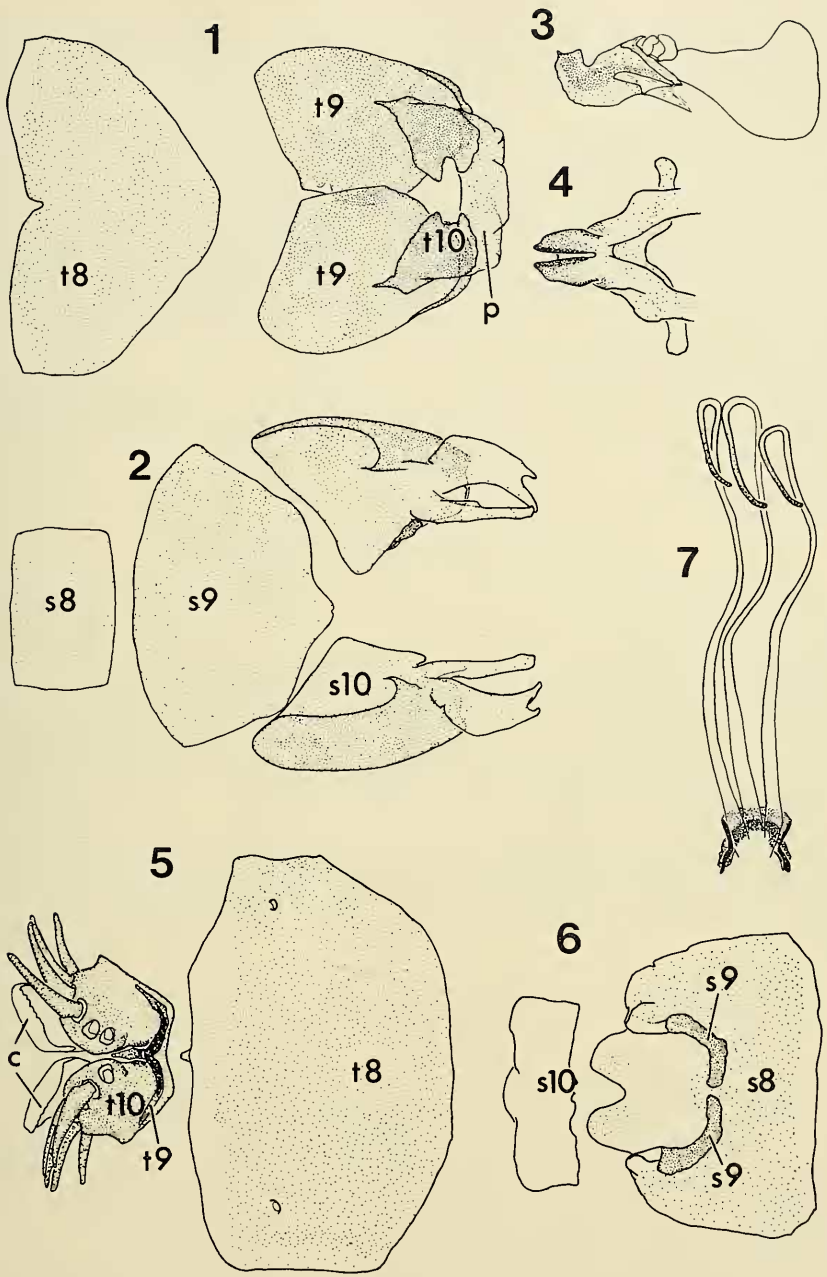
Dakinomyia claripennis (Ricardo); Hardy (1934: 25), misidentification.

Holotype. ♂, QUEENSLAND: Blackdown Tableland, Expedition Range, 6.i.1976, G. Daniels, (AM). *Paratypes.* QUEENSLAND: 14 ♂, 10 ♀, same data as holotype except 6-9.i.1976 (1 ♂, 1♀, BM; G.D); 1 ♀, same data as holotype except 23.xii.1972, M. S. Moulds, (G.D.); Eidsvold, 11.iv.1924, x.1929-iv.1930, ii-vi.1923 (4 ♂, 2 ♀, AM, 2 ♂, 2 ♀, ANIC), C. Gibbons, T. L. Bancroft (1 ♀ from Eidsvold identified as *Neosaropon claripennis* in G. H. Hardy's handwriting).

Other Material Examined (Non-Type): Eidsvold, no data, (1 ♂, 1♀ AM, 1 ♂, 1 ♀ ANIC); 1 ♂, Eidsvold, ii-vi.1923, Mackerras (MM).

MALE. *Head.* Frons, face, occiput and vertex pale yellow pollinose. Mystax comprised of 2 or 3 rows of erect, stout, pale yellow bristles confined to dorsal margin of epistoma. Fronto-orbital bristles absent but a group of 4-8 stout, admixed black and yellow bristles present on lower anterior corner of ocellar tubercle. Ocellar bristles confined to apex of occellarium, comprised of 3 or 4 pair of long stout black bristles with several weaker scattered elements. Palpi brownish, white haired; second distal segment with laterally offset apical pore. Proboscis black, with a laterally compressed dorsal ridge. Occipital bristles pale yellow, more or less confined to a single row with some weaker elements along each side. Antennae orange; first and second segments dusted yellow, setae black; third segment with an apical pit at an oblique angle on inner margin, the pit bearing a short blunt concealed spine. Relative lengths of antennal segments 1:1.05-1.15:3.14-3.86.

Thorax. Mesoscutum brownish with broad blackish medial line and pre- and postsutural dorsocentral areas, the latter sometimes narrowly joined dorsally. Scutellum brownish. Pleura grey dusted. Pronotum with a row of moderately stout yellowish bristles with a posterior and anterior row of weak erect bristles. Posterior pronotum laterally with 2-7 strong erect long black bristles surrounded by weaker white elements. Mesoscutum with abundant short appressed black setae. The medial setae are in a double row and have a bare submedial line either side. Dorsocentral areas bare except for a few anterior setae on dark presutural mark. Dorsocentral bristles not extending anteriorly to suture, posterior elements incurved. Humeral callus with 5 or 6 bristles anteriorly, mixed black and yellowish; posterior surface setate. 5-7 strong black presutural, 3 supra alar and 2 or 3 postalar bristles. Scutellar disc bare; margin with a pair of long, black convergent bristles. Metanotum strongly bulbous; micropubescent only. Mesopleuron, pteropleuron and anepisternite micropubescent. Pleurotergite with a double row of fine bristles, dorsally being finer and denser, sometimes forming a 'tuft'. Metapleuron with some weak bristles posteriorly. *Legs.* Orange-brown. Fore and mid femora with dense appressed black setae and only a single short subapical bristle posteriorly on fore femur and 1 or 2 similar bristles on mid femur. Fore tibia with a row of 2-4 antero- and 5 or 6 posterodorsal short bristles; a row of 6 posteroventral bristles, short except for a single long stout bristle at apical third, usually being the fifth bristle in the row; apically with a fan of 6 or 7 bristles of varying lengths. Tibia dark brown on apical fourth. First 3 tarsal segments yellow, with dense appressed setae; third segment occasionally deep brown on apical third; segments 4 and 5 deep brown; basitarsus twice as long as succeeding segment. Mid tibiae with dense short appressed setae; dark brown on apical fourth; a row of 4 to 6 short dorsal bristles; 3 evenly spaced, long, anterodorsal bristles; a row of 3-5 short anteroventral bristles; 2 long ventral bristles arising from mid point and apical fourth of tibia; a row of 4 or 5 anteroventral bristles. Mid tarsus similar to fore tarsus. Hind femur with dense appressed setae, deep brown on apical sixth; a weak bristle present anteriorly on mid point of femur. Hind tibia yellow, deep brown on apical third; with dense short appressed black setae. A row of 4 long dorsal bristles, 3 long anterodorsals, 2 being before basal half and one on apical third; a row



Figs 1-7. Dakinomyia secuta sp.n., terminalia: (1) tergites of male, ventral view; (2) sternites of male, dorsal view; (3) aedeagus, lateral view; (4) aedeagus, ventral view; (5) tergites of female, dorsal view; (6) sternites of female, dorsal view; (7) spermathecae and furca, dorsal view. Setae are omitted from Figs 1, 2, 5 and 6. c = cerci, p = proctiger, s = sternite, t = tergite.

of 4 or 5 anteroventrally. Hind tarsus deep brown; first and second segments yellow on basal sixth and half respectively. Basitarsus about 2.5 times as long as succeeding segment. *Wings.* Venation and shape similar to *D. froggattii* as illustrated in Hull, 1962 fig. 510.

Abdomen. Strongly tapered; orange-brown. First tergite mostly black, narrowly orange-brown along posterior margin. Second tergite blackish brown on basal fourth, this same area being white pruinescent. White pruinescent stripe on lateral margin of tergites 1-7. Fine short appressed setae present on tergites. Lateral margin of tergites 1-4 with fine pile, relatively long and dense on first tergite and becoming shorter and less dense on each succeeding tergite. Sternites white pruinescent with fine white erect setae. Segment 8 orange, recessed into preceeding segment. *Terminalia* (Figs 1-4) black, rotated 90°.

FEMALE. Similar to male except as follows:

Abdomen. Tergites 5-8 shining, with sparse, erect white setae. Tergites 7 and 8 black. Tergites 1-5 with lateral white pruinescent line. *Terminalia* (Figs 5 and 6) black. Acanthophorites with 6 or 7 pairs of long, stout, blunt spines.

DIMENSIONS: length of body, ♂ 26.0 - 30.1 mm, ♀ 26.5 - 32.5 mm; length of thorax, ♂ 6.5 - 7.4 mm; ♀ 6.8 - 7.7 mm; length of wing, ♂ 17.5 - 19.2 mm; ♀ 17.5 - 19.7 mm.

Morphology of the Female Terminalia

The female terminalia, as herein discussed, comprise the genital and postgenital segments (abdominal segments 8-11).

SEGMENT EIGHT

Tergite 8 (Fig. 5). On the expanded female abdomen, tergite 8 (t8) is a medium sized, easily observable sclerite and is relatively unmodified. The anterior margin is convex, a similar condition existing on the posterior margin, although less strongly so. The posterior margin is somewhat membranous centrally. The ratio of medial length to maximum width is 3.7 to 6.8.

Sternite 8 (Fig. 6). Like t8, sternite 8 (s8) is a relatively large and conspicuous sclerite although it is a more complex structure than t8 and has undergone diverse modifications. A medial recess is present and the submedial area is extended posteriorly. The posterior margin has a submedial lobe extending along the inner surface of s8.

SEGMENT NINE

Tergite nine (and tergite ten) (Fig. 5). Tergite 9 (t9) and tergite 10 (t10) cannot be entirely separated as they appear to be fused. t9 would appear to be reduced to a small narrow, double crescent shaped sclerite at the anterior margin of the deeply, medially divided t10, with a narrow pointed medial extension posteriorly.

Sternite nine (Fig. 6). Sternite 9 (s9) appears as a small sclerite, apparently fused to each of the lateral, anteriorly directed, posterior margins and extends anteriorly and medially to a point slightly posterior to the posterior margin of the furca. Each sclerite is concave posteriorly and more or less sharply angulate anteriorly.

SEGMENT TEN

Tergite ten (Fig. 5). t10 is a rounded sclerite medially divided posteriorly, the division extending towards the anterior margin but not reaching it. Each acanthophorite, as this divided tergite is generally referred to, possesses strongly modified setae, usually six in number but occasionally seven.

Sternite ten (? plus *eleven*) (Fig. 6). Sternite 10 (? plus 11) (s10) is a broad and narrow membranous sclerite that partially overlaps the medial extension of s8. Each anterior lateral corner overlies part of s9. The medial lateral margin appears to be joined with the ventral margin of s10.

CERCI (Fig. 5).

The cerci are attached to the posterior margin of t10 and bear a row of blunt spine-like bristles along the extreme posterior margin. The remaining ventral surface is densely covered with short, fine, hair-like bristles.

Female Reproductive System

The female reproductive system comprises a pair of tubular accessory glands on long slightly narrower ducts (Fig. 7), 3 elongate spermathecae with brownish vesicles, the spermathecal ducts being approximately twice the diameter of the spermathecae and have a short common duct before entering the median oviduct. Viewed dorsally the furca is semicircular with a vertical rib on the dorsal surface. This rib is concave laterally and is flared anteriorly. The ovaries (omitted from Fig. 7) are long and narrow, extending from the posterior margin of segment 1 to the anterior margin of segment 8 and have a short oviduct.

Morphology of the Male Terminalia

The male terminalia comprise the eighth to eleventh abdominal segments.

SEGMENT EIGHT

Tergite eight (Fig. 1). t8 is a medium sized, easily observable sclerite and has undergone some modification. The anterior margin is concave whilst the posterior margin is convex and tends to form a lobe medially. The ratio of medial length to maximum width is 4.8 to 9.3

Sternite eight (Fig. 2). s8 is a small relatively inconspicuous sclerite, and is rectangular in shape with the posterior margin slightly convex.

SEGMENT NINE

Tergite nine (epandrium) (Fig. 1). t9 is slightly longer than t8 and fully cleft medially, the two halves rounded, obtuse and converging posteriorly. The dorsal margin of each half is rounded, forming a small lobe. The anterior margin is straight but angled to the medial axis.

Sternite nine (hypandrium) (Fig. 2). s9 is a well-developed sclerite with a distinctly convex anterior margin. The lateral margins are narrowed posteriorly and the posterior margin has a distinct medial projection.

SEGMENT TEN

Tergite ten (Fig. 1). t10 is reduced to a pair of sclerites lying below the posterior margin of t9. The anterior margin is at approximately 45° to the medial line and slightly concave. The anterolateral margin is extended into a narrow lobe. The lateral margins are almost straight with a convex lateral projection towards anterior margin. Medially, each sclerite has a distinct recess just behind the convex posterior margin.

Sternite ten (coxite) (Fig. 2). s10 appears as a pair of short curved processes ('styles') which arise subapically from the inner surface. The ventral style has parallel sides for most of its length, being bluntly rounded apically and slightly enlarged basally. The dorsal style is much stouter than the ventral style, generally about 3 times as wide. At about one fourth of the length of this process a small dorsal spur is present.

PROCTIGER

The *proctiger* (Fig. 1) is a rectangular membranous sclerite with the anterior margin slightly wider than the posterior margin, extending slightly beyond s10 and has an indistinct medial crease. The posterior margin is almost straight with a small setose lobe on each lateral corner and a broad indistinct convex lobe medially.

AEDEAGUS

The *aedeagus* (Figs 3 and 4) is short, widened anteriorly and sulcate posteroventrally. The anterior dorsal margin and a lateral ventral groove are membranous.

D. secuta differs from *D. froggattii* in the following characters:

D. froggattii has 3rd antennal segment brownish; thorax with dorsum uniformly brown-black; 1st abdominal tergite black dorsally on basal third and on lateral margin sublaterally tergites 2-5 with a black line, extreme margin orange-brown, with a yellow pruinescent line, tergites 6-8 black orange-brown lateral margin; sternites deep black-brown; femora red-brown, dorsally black, and apically widened tibia with, at most, basal third yellow; coxae orange-brown to deep brown; first tergite with black microtrichiae dorsally, white haired laterally, and with 4-5 black stout bristles laterally; tergites two to five with extremely fine, stout orange microtrichiae.

Foraging and Predation

Observations at Expedition Range, Queensland

While awaiting prey, the asilids rest on rocks, soil and sticks close to the ground, though the greatest preference is for large, bare rocks. The flies land on sunny areas and if even partly covered by shadow will usually move immediately. Upon alighting, these flies take up a characteristic position with their bodies turned perpendicularly to the sun. The bodies were normally held high off the substrate with the tip of the abdomen held slightly above the substrate. Predation was observed mostly in the morning from about 7.00 am to 10.30 am.

When prey is sighted, the predator's whole body turns to face it. Forage flights were usually short, ranging from about 30 cm to a metre. Prey was taken only in the air and was usually impaled upon being captured. After capturing prey, the asilid would fly up to 3 m to find a suitable perch to manipulate prey, either a grass stem or twig about 30-45 cm above the ground. Upon alighting one of the fore legs was used as an anchor whilst the other fore leg and the middle legs manipulated the prey. However if a fly was disturbed whilst feeding it would seek a large bare area of rock or soil and continue feeding.

Prey selection is presented only to generic level as specific identifications are not available.

It is noteworthy that the prey of all female asilids captured were Hymenoptera and three of the Hymenoptera were males.

Prey taken:

1 ♀ with *Ropalidea* sp. (Hymenoptera: Vespidae)
1 ♂ with *Rhytidoponera* sp. (Hymenoptera: Formicidae)
1 ♂ with nr *Dasypogon* sp. (Diptera: Asilidae)
1 ♀ with *Apis mellifera* (L.) (Hymenoptera: Apoidea)
1 ♀ with *Tachytes* sp. (Hymenoptera: Sphecidae)
1 ♀ with *Campsomeris* sp. (Hymenoptera: Scoliidae)
1 ♂ with Hemiptera: Cicadidae
1 ♂ with Diptera: Asilidae (undetermined genus)

Dakinomyia froggattii (Dakin and Fordham)

Neosaropogon froggattii Dakin and Fordham, 1922: 523.
Dakinomyia froggattii (Dakin and Fordham) — Hardy 1934: 25.

The only recorded locality for this species is the type locality, Bremer Bay, Western Australia. The following specimens extend the distribution approximately

430 km to the north east:

1 ♀ Lake Cronin, W.A. 16.iii.1970 K. T. Richards (WAD)
1 ♀ Bakers Hill W.A. 24.ii.1969 T. Burbidge (WAD)

Acknowledgements

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